

Colorado River 100th Meridian Team Meeting
1/31/07 Las Vegas, NV

1. Assessment and monitoring in the Colorado River Basin. Current status – what do we know and what do we need to know.

Pat Akers, CDFA:

- 1/17/07 quaggas found at whitsit intake and gene wash. Not found at copper basin, which is the next reservoir down.
- Found at Lake Havasu opposite of Lake Havasu Marina, very sparse and 20-40 feet deep.
- No mussels found at Imperial intake or from L.Colorado to Blythe. None found at Lake Matthews (terminus of CO aqueduct), Skinner Lake, Diamond Valley Reservoir, or Lower Quail Canal (CA aqueduct near Tehachapis?)
- San Diego Water and DWR are getting ready to survey their facilities within next 30 days.
- CDFA crews are doing surface surveys. So far 6 marinas in Needles have been surveyed, no quaggas were found. A survey at a casino opposite Havasu is in progress. They should finish the river by Friday and then move on to other CA lakes.
- CA has \$1 million emergency funds for next 45 days
- Border stations at Needles, Yermo, and Buttal (sp?) junction are in 24/7 operation
- Established a Science Advisory Panel with Andy Cohen conducting an eradication assessment.

Jon Sjoberg, NV Dept. of Wildlife:

- 1/11/07 quaggas confirmed in Lake Mead hatchery. Trout distribution was suspended. Receiving waters at risk include 14 locations (fall/winter 06/07) and 3 locations (Jul 06)
- Transport protocols are being developed with FWS and NPS
- Lake Mead stocking began again 1/26/07
- Lake Mohave/Las Vegas Valley urban pond stocking/internal CRB waters to be determined
- No northern NV waters will be stocked
- At risk waters – priority 1: Ruby Marsh, Kirsch WMA reservoirs, Topaz Lake, LV urban ponds, Lake Mead, Lake Mohave, Eagle Valley Reservoir, Mesquite peak pond, Echo Canyon Reservoir. Priority 2 – Trail Canyon Res, Rye Patch Pond, Wildhorse
- Statewide assessment of risk is in progress

Larry Riley, AZ Dept. of Game and Fish:

- Central AZ project – developing sampling strategy for aqueduct
- People will begin to survey this week
- Large bass tournament at Lake Havasu, all participants were briefed on the situation and told about boat cleaning

- AZ media coverage – front page news and TV coverage
- Developing protocols for cleaning boat and sampling equipment
- Met with law enforcement, working on outreach and protocols
- Willow Beach Fish Hatchery, FWS – no quaggas

Kent Turner, NPS Lake Mead:

- Locations where quaggas were found within Lake Mead: LV Boat Harbor, Lake Mead marina, southern NV Water Authority intake, Lake Mead fish hatchery, Sentinel island, Kingman Wash (up to 2 cm in length at 110 feet deep), Hoover Dam (120 feet deep on upstream face, also found on downstream face), Calville Bay (found on houseboats), in “Narrows” area, Catherine’s Landing (Lake Mohave)
- No quaggas found upstream of Narrows to-date
- Quaggas were not found at Sandy Point, South Cove
- Multi-agency coordination team formed
- A science advisory team has been formed (includes Andy Cohen) and will meet this Friday
- They have increased messaging within the park, including how to wash boats. Need more staff, esp for high use weekends.
- A response plan and ICS framework are in progress

Mark Anderson, NPS Lake Powell:

- NPS divers have checked lower lake marinas in Glen Canyon, no sign of mussels
- Will dive upper lake marinas next week
- Have modified artificial substrate samplers, will distribute end of next week
- Since 2001 they have been monitoring for mussels and have required all vessels that have been in infested waters within 30 days to be washed before launching. Washing is done by a local concessionaire at no charge to boat owner.
- 45 boats were washed last year
- Will need to change program to deal with anticipated increase in boats coming from infested waters (anticipate 4500 boats will need washing in 2007)
- A team has been established within the park
- Trying to raise awareness and authority within the Agency
- Working under the assumption that no mussels present in Powell NRA
- Working closely with Utah
- On 2/8/07 there will be a meeting on Lake Powell with involved agencies
- On 2/15/07 meeting with Grand Canyon people to consider Colorado River below the dam
- Their zebra mussel prevention task force will be restarted
- There has been a press release and an information number established
- Signs are in the works
- Boat washings were taking 20 minutes at \$40 per boat; it will be too expensive to continue the program with an increase in boats. Looking for

alternatives. Perhaps a self-service option? Need to implement before summer.

- Utah is really on board
- They have an aquatic nuisance species program
- 4% of boats at Kiraconti (sp??) (in Colorado on upstream Colorado river) come from zebra mussel infested areas.
- Utah has signs at all launches and looping presentation at visitor center

Tom Burke, USBR Lake Mead:

- Operate Hoover, Davis and Parker Dams
- They have authority to deliver water but not to shut it off
- Quaggas found on upstream side of NV intake tower at Hoover at 35-85 feet deep. Highest density was at 70-80 feet but population was low density overall. A single mussel was found on the downstream side. Dam was inspected with a remote vehicle.
- On 2/5/07 the AZ side intake tower will be inspected
- The following weeks, they will inspect Davis and Parker dams
- No quaggas found at willow beach intake
- They don't see quaggas as a threat to their tubes that pass water through (cooling water for power plant)
- Dive team will treat equipment
- Future actions:
 - Hoover Dam visitor center could be an information distribution point (1 million visitors per year).
 - They will continue to monitor their structures, gather info on treatment, and work under assumption pop density will get worse.
 - in "wait and see" and "information gathering" mode

Walt Donaldson, UT Dept. of Natural Resources:

- Will set up a rapid response team
- Haven't found any quaggas in Lake Powell
- Their priorities are central Utah reservoirs
- Initial target is the southern Utah Colorado river drain

2. Using PCR as a monitoring tool – Dr. Mark Fischer, Skidaway Institute of Oceanography: marc.frischer@skio.usg.edu
 - Sensitive detection of larvae, specific and unambiguous, quantitative, & amenable to automation
 - Very sensitive, can detect 1 larvae with PCR probe
 - Can distinguish Dreissena from Corbicula (Asian clam), but can not at this time distinguish zebras from quaggas (haven't tried yet)
 - Can process hundreds of samples per day
 - Approximately \$1-5 per sample, cost will increase with increase in samples due to labor involved
 - Cross-polarization technique for veliger detection is very tedious and prone to mistakes (mistake veligers for ostracods)
 - PCR is reliable and sensitive for early detection and is cost effective

- Can be used to ensure hatchery fish transport is clean
- (In side discussion with MWD, PCR not good to determine success of eradication because PCR cannot distinguish between live and dead DNA. MWD lab can process samples in about 2 months. Willing to assist CA with sampling processing during this blitz phase.)
- Comment from Scott Smith, USGS-Washington State. USGS is looking at PCR as a monitoring tool for ballast water.
- Lake George, NY – successful control of zebra mussel population
 - mapped out zebra mussel distribution, found to be patchy
 - Focused on “hot spots” with highest mussel concentration, as this is where successful reproduction is happening
 - patchy distribution was key to controlling population. Mussels need patchiness for successful reproduction.
 - eradication efforts occurred at 3 marinas (isolated populations)
 - used many volunteer scuba divers (682 hours) to manually remove mussels, totaling about 38% of the population. Majority of mussels removed in 2000, but efforts continued through 2006. All removed by hand.
 - zebra mussel population dropped dramatically within the first year and stayed down. It showed no recruitment. Ave size in 2000 was 12mm. Ave size in 2003 was 24mm. Absence of small mussels indicated no recruitment. The larger mussels present in 2003 were small mussels missed in 2000.
 - another method was the use of benthic barrier mats (2 different mat sizes – 1meter-sq and 4meter-sq) to deprive mussels of dissolved oxygen, showed 97-99.7% mortality in 8 weeks with both mats, and 70% mortality after 4 weeks with 4meter-sq mat.
 - any good program should include: risk assessment, early larvae detection, education/outreach/mitigation, monitoring for adults, reduce adult density to reduce spawning success.

3. Analysis of boater surveys, David Britton – pat’s notes look good on this one.

4. Role of state boating law enforcement officers

- Kevin Bergersen – pat’s notes look good re: enforcement
- Wen Baldwin, Lake Mead Boat Owner’s Association – 100th Meridian website has information regarding boat decontamination time. Has been conducting watercraft inspection training (WIT) and watercraft decontamination training (WDT) for boating law enforcement in the western states. Has grab&go decontamination kits and training manual and video available.
 - Funding expected to increase to allow for more training classes
- David Britton, UTA
 - Quarantine time estimator is on 100th Meridian website. Based on humidity zone and monthly average air temperature. If in doubt, hold for 30 days.
 - website also contains inv. spp. laws for each state.

5. Boater Education and Ramp Signs – Kirk Young AZGF

- NPS developing new sign specific to L Colorado and Mead
- need signage at uninfested waters
- chemical cleaning- impact to motor unknown, working with engine manufacturers to determine best cleaning method and not void warranty, need to evaluate other alternatives to bleach

6. Boat Washing - Bob Pitman

- 2 private firms present with boat washing systems
- Tanya's comments: I have info on one washing system that can wash a boat in 1-2 minutes. I think it looks promising and worthy of serious consideration.

7. Consistent Messages and Coordination – Sandee Dingman

- Materials in draft form, will make available when finalized
- 2 signs – generic “stop aquatics’ and specific ‘infested-clean your boat’
- Recognize geographic scope very large and need to coordinate

8. Afternoon brainstorming sessions:

Assessment and Monitoring:

- Need to assess extent (range), impacts (economic, ecological, physical), qualitative/quantitative, risk factors
- Need to know more about quagga biology (age, growth, reproduction)
- Monitoring: -determine geographic distribution
-get the big picture (settled individuals)
-associated molluscs (ecological impacts)
-depth
-need consistent monitoring protocol, data collection and reporting across the region, GIS compatible
-species confirmation as part of protocol
- Training needed on ID, sampling, preservation. Tailor training to specific groups (biologist, citizen, facility inspector, etc.)
- A training team is being formed and will include Tanya Veldhuizen and Brianne Noble
- Action item: evaluation of current monitoring. Why didn't we detect them earlier?
- A Colorado river subgroup is being formed
- Need vector monitoring/determination of source population
- Need a risk assessment of water bodies and prediction of spread

Preventing Spread:

- Vectors of 2 types: plumbing (diversions, natural river flow) and people (boats, industrial, aquaculture, agencies (sampling equip), anglers)
- Solutions:
 - marina rental slips – inspect boats moving into/out of rental slips
 - existing agri and commercial inspect stations
 - NPS entrance/exit gates (not all ramps have gates)
 - Other fee stations

- Boat wash
- Consistent reg's and authority
- Permits – mandatory boat cleaning part of boating permit application requirements
- Outreach thru boater registration mailing
- Fix gaps in laws-when you register your boat, you agree to boat inspection (similar to blood alcohol check point law)
- Fish stocking locations
- Much opposition from some people regarding boat washing
 - Argument against: no system and staffing level can handle 5,000 boats per day; not all ramps are staffed
 - Argument for: estimated need of 39 units at L Mead, at 15 minutes per boat, to handle 5,000 boats. Estimated cost of \$11million for set-up. Cheaper than anticipated control costs and opening up all CA ag inspection stations.
- Info Gaps:
 - % veliger survival thru dam
 - # and cost of wash stations
 - Realistic potential for containment
 - Look into non-point source pollution funding